What is SARE?
Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $309 million to more than 7,407 initiatives.

SARE is grassroots with far-reaching impact
Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results
SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining an online library of practical publications, granteeproduced information products and other educational materials.

SARE in South Carolina
southern.sare.org/sare-in-your-state/south-carolina

$2,586,655 in total funding
57 grant projects
(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries

SARE: Advancing the Frontier of Sustainable Agriculture in...

South Carolina

Project Highlight: Fruit Bagging Reduce Reliances on Pesticides

When Clemson University fruit specialist Juan Carlos Melgar suggested putting a paper bag over a peach to detract insects and diseases during production, farmers laughed. But when his SARE-funded trials showed that the technique protects the fruit from devastating brown rot, marauding insects like plum curculio and even hungry birds, producers and backyard growers started paying attention.

Researchers found that bagging peaches between petal fall and harvest reduces pesticide use while increasing yields and maintaining flavor. Even though it involves more labor, Melgar estimated that bagging can increase revenue by $95 per tree in an organic system when the fruit is sold directly to consumers. “We’ve gotten a lot of positive responses from farmers all over the country as a result of the research study,” said Melgar.

Fruit bagging for protection is a common strategy in Asia. With South Carolina ranked second in the nation behind California in peach production at 77,000 tons, researchers at Clemson felt that applying the technique to orchards was a worthwhile endeavor because peach growers in the southeastern U.S. face very high pest and disease pressures. Melgar is taking this research to a regional level with a newly acquired $1 million USDA-NIFA grant, applying the technique to more orchards in South Carolina, Georgia and Florida.

For more information on this project, see sare.org/projects, and search for project number OS16-094.
SARE Grants in South Carolina

Total awards: 57 grants

- 18 Farmer/Rancher
- 6 Graduate Student
- 10 On Farm Research/Partnership
- 10 Professional Development Program
- 13 Research and Education

Total funding: $2,586,655

- $157,270 Farmer/Rancher
- $73,864 Graduate Student
- $142,377 On Farm Research/Partnership
- $568,878 Professional Development Program
- $1,644,266 Research and Education

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: southern.sare.org/sare-in-your-state/south-carolina

Contact Your SARE State Coordinator

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit southern.sare.org/state-pages/south-carolina to learn more.

Edoe Agbodjan
South Carolina State University
(803) 707-2112
eagbodjan@scsu.edu

Matt Smith
Clemson University
(843) 519-0464
mcs5@clemson.edu

For detailed information on SARE projects, go to www.SARE.org

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
South Carolina has been awarded $2,630,275 grants to support 59 projects, including but not limited to, 9 research and/or education projects, 10 professional development projects and 18 producer-led projects. South Carolina has also received additional SARE support through multi-state projects.

### RESEARCH AND EDUCATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS19-305</td>
<td>Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems</td>
<td>$299,963</td>
<td>Juang-Horng Chong, Clemson University</td>
</tr>
<tr>
<td>LS19-306</td>
<td>Utility of Anaerobic Soil Disinfestation and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems</td>
<td>$293,470</td>
<td>Matthew Cutulle, Clemson University, CREC</td>
</tr>
<tr>
<td>LS16-273</td>
<td>Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests</td>
<td>$135,487</td>
<td>Dr. John Quinn, Furman University</td>
</tr>
<tr>
<td>LS09-217</td>
<td>Improvement of the safety of food handling practices on small farms</td>
<td>$200,000</td>
<td>Dr. Paul Dawson, Clemson University</td>
</tr>
<tr>
<td>LS06-188</td>
<td>Expanding the grazing season for sustainable year-round forage-finished beef production</td>
<td>$163,000</td>
<td>Susan Duckett, Clemson University</td>
</tr>
<tr>
<td>LS04-213</td>
<td>Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System</td>
<td>$241,000</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>LS03-155</td>
<td>Creating a value chain system for local and regional farm products</td>
<td>$19,310</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>LS03-157</td>
<td>Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop</td>
<td>$173,125</td>
<td>Jason Norsworthy, Clemson University</td>
</tr>
<tr>
<td>LS93-054</td>
<td>Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows</td>
<td>$118,911</td>
<td>Jean Bertrand, Clemson University</td>
</tr>
</tbody>
</table>

### PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ES19-150</td>
<td>Advanced Soil Health Training for South Carolina Agriculture Professionals</td>
<td>$79,847</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>ES17-137</td>
<td>Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce</td>
<td>$78,008</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
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<tr>
<td>ES13-117</td>
<td>Training in Renewable Energy Systems for Small Farms to Reduce Energy Costs and Improve Profitability</td>
<td>$78,128</td>
<td>Dr. Geoff Zehnder Clemson University</td>
</tr>
<tr>
<td>ES11-108</td>
<td>Pollinator Conservation Short Course</td>
<td>$92,066</td>
<td>Eric Mader The Xerces Society</td>
</tr>
<tr>
<td>ES10-106</td>
<td>On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms</td>
<td>$83,775</td>
<td>Dr. Geoff Zehnder Clemson University</td>
</tr>
<tr>
<td>ES02-064</td>
<td>Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems</td>
<td>$49,926</td>
<td>Dr. Geoff Zehnder Clemson University</td>
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<tr>
<td>ES01-057</td>
<td>South Carolina Farm and Forest Land Conservation Training</td>
<td>$25,428</td>
<td>Ben Boozer Clemson Institute for Economic &amp; Community Develop</td>
</tr>
<tr>
<td>ES97-017</td>
<td>Overcoming Training Obstacles: A Realistic Cost-Effective Approach</td>
<td>$10,000</td>
<td>Charles Q. Artis South Carolina State University, Community and Economic Development</td>
</tr>
<tr>
<td>ES97-018</td>
<td>The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources</td>
<td>$60,000</td>
<td>Charles Q. Artis South Carolina State University, Community and Economic Development</td>
</tr>
<tr>
<td>LST94-006</td>
<td>Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors</td>
<td>$11,700</td>
<td>Jim Palmer Clemson</td>
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</tbody>
</table>

**FARMER/RANCHER GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
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</thead>
<tbody>
<tr>
<td>FS20-326</td>
<td>Summer Cover Crops for Organic No-till Broccoli</td>
<td>$14,820</td>
<td>Sarah Belk Wild Hope Farm</td>
</tr>
<tr>
<td>FS18-309</td>
<td>Studying the Use of Copper to Raise Healthier Goats</td>
<td>$10,000</td>
<td>Judy Langley Windy Hill Farm</td>
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<tr>
<td>FS17-300</td>
<td>Scaling Indigo Production in South Carolina</td>
<td>$5,965</td>
<td>Kathy McCullough Farmer</td>
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<tr>
<td>FS16-288</td>
<td>Modified Method for Roller-Crimper No Till System in the Southeast Coastal Plain</td>
<td>$8,327</td>
<td>Mary Connor Three Sisters Farm</td>
</tr>
<tr>
<td>FS14-284</td>
<td>Is freshwater fish compost as effective as saltwater fish compost on vegetable production?</td>
<td>$10,000</td>
<td>Dale Snyder Sweetgrass Garden Co-op</td>
</tr>
<tr>
<td>FS13-276</td>
<td>Shade cloth for fall bearing blackberry drupet abortion/malfunction problems in southeastern USA</td>
<td>$6,458</td>
<td>Walker Miller The Happy Berry Bunch</td>
</tr>
<tr>
<td>FS11-255</td>
<td>Cucumber Pollination with Bumblebees</td>
<td>$8,530</td>
<td>David MacFawn Rawl Farms</td>
</tr>
<tr>
<td>FS11-257</td>
<td>Is Fish Waste Compost worth the Mess and Effort?</td>
<td>$9,848</td>
<td>Dale Snyder Sweetgrass Garden Co-op</td>
</tr>
<tr>
<td>FS10-245</td>
<td>Forage Chicory Use in Rotational Grazing of Sheep to Reduce Intestinal Worms, Reduce Grain Supplementation, And Maximize Growth</td>
<td>$9,078</td>
<td>Kathy McCaskill Old McCaskill’s Farm</td>
</tr>
</tbody>
</table>
Using Buckwheat to Attract Beneficial Insects for Crop Protection $9,037 Daniel Parson
Parson Produce

Dual Season Organic Asparagus Production $9,995 Mary Connor
Three Sisters Farm

Edamame Variety Trials for the Local Fresh Market $4,777 Carolyn A. Prince

Cattle Lane Construction Alternatives That Enhance Intensive Grazing Systems $9,850 Tom Trantham
Trantham's Dairy Farm

Red Plastic Mulch as an Alternative to Insecticides in Production of Seedless Watermelons $7,390 John Frazier

Demonstration of a Low-Input Diversified Small Farm Operation $9,200 Theodore Nesmith

Cover Crops in Integrated Vegetable Production Systems $9,285 Charles Wingard
W.P. Rawl & Sons Farms

Vegetable Marketing Strategies for a Small Farm Co-op $10,000 Curtis Inabinett
Sea Island Farmers Co-op

Clover Cover Crops, Weed Management and Consumer Tolerance to Insect Damage $4,710 Horace & Shaw Skipper
The Berry Patch

Graduate Student Grants

Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop $16,496 Dr. Sruthi Narayanan
Clemson University
Ricardo St. Aime
Clemson University

Optimizing Nutritional Management in Fruit Tree Production in Southern U.S. $16,441 Juan Carlos Melgar
Clemson University
Qi Zhou
Clemson University

Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System $10,927 Dr. Geoff Zehnder
Clemson University
David Robb
Clemson University

Control of Soilborne Fungi with Biofumigation $10,000 Anthony Keinath
Clemson University
Samuel Njoroge
Clemson University

Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction $10,000 Terry Walker
Clemson University
Meidui Dong
Clemson University

The Assessment of Conservation and Traditional Tillage Systems on Weed Dynamics, Insect Abundance, and Northern Bobwhite Quail Life and Behavioral Patterns $10,000 William Bowerman
Clemson University
Derek Eggert
Clemson University

On Farm Research/Partnership Grants

Project # Project Title SARE Support Project Leaders
GS18-192 Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop $16,496 Dr. Sruthi Narayanan
Clemson University
Ricardo St. Aime
Clemson University

GS17-174 Optimizing Nutritional Management in Fruit Tree Production in Southern U.S. $16,441 Juan Carlos Melgar
Clemson University
Qi Zhou
Clemson University

GS13-126 Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System $10,927 Dr. Geoff Zehnder
Clemson University
David Robb
Clemson University

GS04-034 Control of Soilborne Fungi with Biofumigation $10,000 Anthony Keinath
Clemson University
Samuel Njoroge
Clemson University

GS04-041 Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction $10,000 Terry Walker
Clemson University
Meidui Dong
Clemson University

GS03-020 The Assessment of Conservation and Traditional Tillage Systems on Weed Dynamics, Insect Abundance, and Northern Bobwhite Quail Life and Behavioral Patterns $10,000 William Bowerman
Clemson University
Derek Eggert
Clemson University
### OS20-133
The Potential of Inter-seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System

$20,000  
Dr. Sruthi Narayanan  
Clemson University

### OS18-118
Cover Cropping to Increase the Sustainability of Cropping Systems by Developing Soil Organic Matter, Improving Soil Health, and Suppressing Weed Growth

$15,000  
Dr. Sruthi Narayanan  
Clemson University

### OS17-109
Identification of Factors Involved in Peach Skin Streaking

$15,000  
Guido Schnabel  
Clemson University

### OS16-094
Fruit Bagging as a Strategy to Reduce Reliance on Pesticides for the Production of Peaches in the Southeast

$14,967  
Juan Carlos Melgar  
Clemson University

### OS16-096
Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops

$14,995  
Dr. Sruthi Narayanan  
Clemson University

### OS16-100
Getting to the Bottom of ‘Bronzing’, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers

$15,000  
Guido Schnabel  
Clemson University

### OS16-093
Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence

$14,990  
Dan Anco  
Clemson University

### OS07-035
On-Farm Use of a Hybrid Vetch Cover Crop to Reduce Fusarium Wilt in Seedless Watermelon

$9,900  
Anthony Keinath  
Clemson University

### OS03-010
Poultry Litter Research Project

$12,600  
David Gunter  
Clemson Extension Service

### OS03-013
Growing Organic Fruits and Vegetables for Local Farmer’s Markets

$9,925  
York Glover

### SUSTAINABLE COMMUNITY INNOVATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| CS12-087  | Fighting Obesity in Schools By Changing Eating Habits of Students | $10,000 | Robert Behr  
Ashley Ridge High School |
| CS10-078  | GrowFood Carolina | $10,000 | Lisa Turansky  
South Carolina Coastal Conservation League |
| CS08-065  | Marshview Community Organic Farms – Young Farmers of the Lowcountry | $9,700 | Sara Reynolds  
Marshview Community Organic Farm |
| CS08-064  | Growing the Manning Farmer’s Market | $5,050 | Rebecca Rhodes  
City of Manning |
| CS07-058  | Farmers Market Support Activities | $2,570 | Grady Sampson |
| CS07-059  | Chicora Farmers Market | $6,300 | Amanda Crump  
Metanoia CDC |
Total funding from the USDA SARE program to South Carolina

$2,630,275

For further information on projects, contact Candace Pollock, Southern SARE public relations coordinator, at (770) 412-4786 or cpollock@uga.edu. Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).